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# 1 [Specification and implementation of exceptions in workflow management systems](#)



Fabio Casati, Stefano Ceri, Stefano Paraboschi, Guisepppe Pozzi  
September 1999 **ACM Transactions on Database Systems (TODS)**, Volume 24 Issue 3

Publisher: ACM Press

 Full text available: pdf(250.40 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Although workflow management systems are most applicable when an organization follows standard business processes and routines, any of these processes faces the need for handling exceptions, i.e., asynchronous and anomalous situations that fall outside the normal control flow. In this paper we concentrate upon anomalous situations that, although unusual, are part of the semantics of workflow applications, and should be specified and monitored coherently; in most real-life applica ...

**Keywords:** active rules, asynchronous events, exceptions, workflow management systems

# 2 [Logic based modeling and analysis of workflows](#)



Hasan Davulcu, Michael Kifer, C. R. Ramakrishnan, I. V. Ramakrishnan  
May 1998 **Proceedings of the seventeenth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems PODS '98**

Publisher: ACM Press

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# 3 [Adaptation and integration: Workflow adaptation as an autonomic computing problem](#)



Kevin Lee, Rizos Sakellariou, Norman W. Paton, Alvaro A. A. Fernandes  
June 2007 **Proceedings of the 2nd workshop on Workflows in support of large-scale science WORKS '07**


Publisher: ACM Press

 Full text available: pdf(266.14 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The performance of long running scientific workflows stands to benefit from adapting to changes in their environment. Autonomic Computing provides methodologies for managing run-time adaptations in managed systems. In this paper, we apply the monitoring, analysis, planning and execution (MAPE) model from autonomic computing to support the runtime modification of workflows with the aim of improving their performance. We systematically identify run-time adaptations and indicate how such behavior ...

**Keywords:** adaptation, autonomic computing, scheduling, workflows

#### 4 A workflow-based electronic marketplace on the Web

 Asuman Dogac, Ilker Durusoy, Sena Arpinar, Nesime Tatbul, Pinar Koksai, Ibrahim Cingil, Nazife Dimilliler


December 1998 **ACM SIGMOD Record**, Volume 27 Issue 4

**Publisher:** ACM Press

Full text available:  [pdf\(725.80 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

In this paper, we describe an architecture for an open marketplace exploiting the workflow technology and the currently emerging data exchange and metadata representation standards on the Web. In this market architecture electronic commerce is realized through the adaptable workflow templates provided by the marketplace to its users. Having workflow templates for electronic commerce processes results in a component-based architecture where components can be agents (both buying an ...

#### 5 Workflow, transactions and datalog


 Anthony J. Bonner

May 1999 **Proceedings of the eighteenth ACM SIGMOD-SIGACT-SIGART symposium on Principles of database systems PODS '99**

**Publisher:** ACM Press


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#### 6 Access control mechanisms for inter-organizational workflow

 Myong H. Kang, Joon S. Park, Judith N. Froscher

May 2001 **Proceedings of the sixth ACM symposium on Access control models and technologies SACMAT '01**


**Publisher:** ACM Press

Full text available:  [pdf\(253.16 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

As more businesses engage in globalization, inter-organizational collaborative computing grows in importance. Since we cannot expect homogeneous computing environments in participating organizations, heterogeneity and Internet-based technology are prevalent in inter-organizational collaborative computing environments. One technology that provides solutions for data sharing and work coordination at the global level is inter-organizational workflow. In this paper, we investigate the access co ...

**Keywords:** access control, enterprise, organizational security, security, workflow

#### 7 Workflow management in geoprocessing applications


 Mathias Weske, Gottfried Vossen, Claudia Bauzer Medeiros, Fatima Pires

November 1998 **Proceedings of the 6th ACM international symposium on Advances in geographic information systems GIS '98**

**Publisher:** ACM Press


Full text available:  [pdf\(799.33 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

#### 8 A comprehensive approach to flexibility in workflow management systems

 Petra Heini, Stefan Horn, Stefan Jablonski, Jens Neeb, Katrin Stein, Michael Teschke

March 1999 **ACM SIGSOFT Software Engineering Notes, Proceedings of the international joint conference on Work activities coordination and collaboration WACC '99**, Volume 24 Issue 2

**Publisher:** ACM Press

Full text available:  [pdf\(1.23 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



Flexibility has recently grown to be one of the major research topics in the area of workflow management. In this paper we focus on flexibility of workflow management applications, in contrast to flexibility of the implementation of workflow management systems. In a case study we show the necessity of flexibility in workflow management applications. This flexibility can roughly be classified into flexibility, which is provided by the workflow type, and flexibility, which goes beyond the scope of ...

**Keywords:** flexibility, workflow management system

9 Session2: Process descriptions as organisational accounting devices: the dual use of workflow technologies



Paul Dourish

September 2001

**Proceedings of the 2001 International ACM SIGGROUP Conference on Supporting Group Work GROUP '01**

**Publisher:** ACM Press

Full text available: pdf(150.23 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Workflow technologies present a problem for CSCW. On the one hand, they are perhaps the most successful form of groupware technology in current use; but on the other, they have been subject to sustained and cogent critiques, particularly from perspective of the analysis of everyday working activities. This leads inevitably to the question: in the face of these critiques, just why and how do workflow technologies prove effective? This paper suggests that part of the solution lies in the fact th ...

10 The MENTOR workbench for enterprise-wide workflow management



Dirk Wodtke, Jeanine Weissenfels, Gerhard Weikum, Angelika Kotz Dittrich, Peter Muth

June 1997 **ACM SIGMOD Record , Proceedings of the 1997 ACM SIGMOD international conference on Management of data SIGMOD '97**, Volume 26 Issue 2

**Publisher:** ACM Press

Full text available: pdf(720.81 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

MENTOR ("Middleware for Enterprise-Wide Workflow Management") is a joint project of the University of the Saarland, the Union Bank of Switzerland, and ETH Zurich [1, 2, 3]. The focus of the project is on enterprise-wide workflow management. Workflows in this category may span multiple organizational units each unit having its own workflow server, involve a variety of heterogeneous information systems, and require many thousands of clients to interact with the workflow management ...

11 Memory-aware compilation: Operating system integrated energy aware scratchpad allocation strategies for multiprocess applications



Robert Pyka, Christoph Faßbach, Manish Verma, Heiko Falk, Peter Marwedel

April 2007 **Proceedings of the 10th international workshop on Software & compilers for embedded systems SCOPES '07**

**Publisher:** ACM Press

Full text available: pdf(1.25 MB) Additional Information: [full citation](#), [abstract](#), [references](#)

Various scratchpad allocation strategies have been developed in the past. Most of them target the reduction of energy consumption. These approaches share the necessity of having direct access to the scratchpad memory. In earlier embedded systems this was always true, but with the increasing complexity of tasks systems have to perform, an additional operating system layer between the hardware and the application is becoming mandatory. This paper presents an approach to integrate a scratchpad m ...

12 Group 4: Managing information quality in e-science: the curator workbench



Paolo Missier, Suzanne M. Embury, Mark Greenwood, Alun Preece, Binling Jin

June 2007 **Proceedings of the 2007 ACM SIGMOD international conference on Management of data SIGMOD '07**

**Publisher:** ACM Press

Full text available:  [pdf\(138.66 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Data-intensive e-science applications often rely on third-party data found in public repositories, whose quality is largely unknown. Although scientists are aware that this uncertainty may lead to incorrect scientific conclusions, in the absence of a quantitative characterization of data quality properties they find it difficult to formulate precise data acceptability criteria. We present an Information Quality management workbench, called *Qurator*, that supports data experts in the spe ...

**Keywords:** information quality management, semantic modelling of information quality


### 13 [Supporting workflow cooperation within and across organizations](#)



Fabio Casati, Angela DisENZA

March 2000 **Proceedings of the 2000 ACM symposium on Applied computing - Volume 1 SAC '00**

**Publisher:** ACM Press

Full text available:  [pdf\(692.83 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

**Keywords:** events, virtual enterprises, workflows

### 14 [GLARE: A Grid Activity Registration, Deployment and Provisioning Framework](#)



Mumtaz Siddiqui, Alex Villazon, Jurgen Hofer, Thomas Fahringer

November 2005 **Proceedings of the 2005 ACM/IEEE conference on Supercomputing SC '05**

**Publisher:** IEEE Computer Society

Full text available:  [pdf\(1.43 MB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Resource management is a key concern for implementing effective Grid middleware and shielding application developers from low level details. Existing resource managers concentrate mostly on physical resources. However, some advanced Grid programming environments allow application developers to specify Grid application components at high level of abstraction which then requires an effective mapping between high level application description (activity types) and actual deployed software components ...


### 15 [A workflow analysis and design environment \(WADE\)](#)



Perakath C. Benjamin, Charles Marshall, Richard J. Mayer

December 1995 **Proceedings of the 27th conference on Winter simulation WSC '95**

**Publisher:** ACM Press, IEEE Computer Society

Full text available:  [pdf\(732.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents the architecture of a workflow analysis and design environment (WADE) that will provide robust support for simulation-based design of next-generation workflow systems. The architecture's utility is illustrated by showing its use to design and analyze material ordering and control system workflow.

### 16 [Compiler-optimized usage of partitioned memories](#)



Lars Wehmeyer, Urs Helmig, Peter Marwedel

June 2004 **Proceedings of the 3rd workshop on Memory performance issues: in conjunction with the 31st international symposium on computer architecture WMPI '04**

**Publisher:** ACM Press

Full text available:  [pdf\(412.30 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In order to meet the requirements concerning both performance and energy consumption in embedded systems, new memory architectures are being introduced. Beside the well-known use of caches in the memory hierarchy, processor cores today also include small onchip memories called scratchpad memories whose usage is not controlled by hardware,


but rather by the programmer or the compiler. Techniques for utilization of these scratchpads have been known for some time. Some new processors provide more t ...

17 Energy-aware compiling and scheduling: Dynamic overlay of scratchpad memory for energy minimization

Manish Verma, Lars Wehmeyer, Peter Marwedel

September 2004 **Proceedings of the 2nd IEEE/ACM/IFIP international conference on Hardware/software codesign and system synthesis CODES+ISSS '04**

Publisher: ACM Press

Full text available:  pdf(163.12 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The memory subsystem accounts for a significant portion of the aggregate energy budget of contemporary embedded systems. Moreover, there exists a large potential for optimizing the energy consumption of the memory subsystem. Consequently, novel memories as well as novel algorithms for their efficient utilization are being designed. Scratchpads are known to perform better than caches in terms of power, performance, area and predictability. However, unlike caches they depend upon software allocati ...

**Keywords:** dynamic allocation, overlay, scratchpad

18 Embedded software: task scheduling and compilation: Data partitioning for maximal scratchpad usage

Manish Verma, Stefan Steinke, Peter Marwedel

January 2003 **Proceedings of the 2003 conference on Asia South Pacific design automation ASPDAC**

Publisher: ACM Press

Full text available:  pdf(118.25 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)


The energy consumption for Mobile Embedded Systems is a limiting factor because of today's battery capacities. The memory subsystem consumes a large chunk of the energy, necessitating its efficient utilization. Energy efficient scratchpads are thus becoming common, though unlike caches they require to be explicitly utilized. In this paper, an algorithm integrated into a compiler is presented which analyzes the application, partitions an array variable whenever its beneficial, appropriately modif ...

19 Process and workflow: Lynx: an open architecture for catalyzing the deployment of interactive digital government workflow-based systems

Iván P. Vélez, Bienvenido Vélez

May 2006 **Proceedings of the 2006 international conference on Digital government research dg.o '06**

Publisher: ACM Press

Full text available:  pdf(1.09 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

We introduce Lynx, a new email extension for workflow systems based on Web Services. Web service based workflows provide support for aggregating web services into new higher-level web services by means of process composition. This approach does not usually support direct interaction with people. On the other hand, traditional collaboration tools like email or instant messaging do not provide the necessary support for structured business processes. Lynx provides a web service through which a work ...

**Keywords:** BPEL, E-mail, XML, digital government, web services, workflow, xforms

20 On the complementarity of workflow management and business process modeling

Stefan Jablonski

August 1995 **ACM SIGOIS Bulletin**, Volume 16 Issue 1

Publisher: ACM Press





Full text available:  pdf(752.44 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

The way business processes are implemented currently is out-of-date. It cannot keep pace with the rapid changes of today's business behavior. Thus, new ways to structure business processes have to be investigated. Business process reengineering is the upcoming discipline that is able to cope with the requirements posted by today's way of conducting business. However, models of business processes defined through business process reengineering still lack a suitable execution environment. Conventio ...

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- 1 [Transportation systems: Automatic composition of aggregation workflows for transportation modeling](#)  
 José Luis Ambite, Matthew Weathers  
 May 2005 **Proceedings of the 2005 national conference on Digital government research dg.o2005**  
 Publisher: Digital Government Research Center

Full text available: pdf(268.54 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Many scientific problems can be modeled as computational workflows that integrate data from heterogeneous sources and process such data to derive new results. These data analysis problems are pervasive in the physical and social sciences, as well as in government practice. In this paper, we present an approach to automatically create computational workflows in response to user data requests. We represent both data access and data processing operations uniformly as web services. We describe the i ...

**Keywords:** RDF, information integration, triple logic, web service composition, workflow

- 2 [The specification and enforcement of authorization constraints in workflow management systems](#)

Elisa Bertino, Elena Ferrari, Vijay Atluri

February 1999 **ACM Transactions on Information and System Security (TISSEC)**, Volume 2 Issue 1

Publisher: ACM Press

Full text available: pdf(374.02 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)


In recent years, workflow management systems (WFMSs) have gained popularity in both research and commercial sectors. WFMSs are used to coordinate and streamline business processes. Very large WFMSs are often used in organizations with users in the range of several thousands and process instances in the range of tens and thousands. To simplify the complexity of security administration, it is common practice in many businesses to allocate a role for each activity in the process and then assign ...

**Keywords:** access control, authorization constraints, role and user planning

- 3 [CIDP— on workflow-based client integration in complex client oriented design projects](#)

W. Dangelmaier, H. Hamoudia, R. F. Klahold

April 1999 **ACM SIGGROUP Bulletin**, Volume 20 Issue 1

**Publisher:** ACM PressFull text available:  pdf(1.06 MB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Today's attendance companies tend strongly upward to "client orientation" by focusing on adjusting products to special needs and designing internal processes to fit variable customer requirements. For any kind of client-centred projects the degree to which customers take part in the design decision becomes of utmost importance. In this paper we will demonstrate innovative concepts we are validating which support a co-operative design of manifold projects. Our approach is based on the process-cen...

**Keywords:** Internet, product development, user interaction, workflow

#### 4 Providing transactional properties for migrating workflows

October 2004 **Mobile Networks and Applications**, Volume 9 Issue 5**Publisher:** Kluwer Academic PublishersFull text available:  pdf(138.89 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Current workflow management systems have several limitations that need to be addressed by the research community. This paper deals with two of them: the lack of flexibility necessary in a changing business environment, and the lack of transactional guarantees for workflow applications.

To handle the dynamic character of current business environments and processes, we have proposed the Migrating Workflow Model. A migrating workflow transfers its code (specification) and its execution st ...

**Keywords:** migrating workflows, mobile environment, transactions, workflows

#### 5 Research sessions: Research 11: OLAP: Composite subset measures


Lei Chen, Raghu Ramakrishnan, Paul Barford, Bee-Chung Chen, Vinod Yegneswaran

September 2006 **Proceedings of the 32nd international conference on Very large data bases VLDB '06****Publisher:** VLDB EndowmentFull text available:  pdf(457.48 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Measures are numeric summaries of a collection of data records produced by applying aggregation functions. Summarizing a collection of subsets of a large dataset, by computing a measure for each subset in the (typically, user-specified) collection is a fundamental problem. The multidimensional data model, which treats records as points in a space defined by dimension attributes, offers a natural space of data subsets to be considered as summarization candidates, and traditional SQL and OLAP cons ...

#### 6 A flexible model supporting the specification and enforcement of role-based authorization in workflow management systems


Elisa Bertino, Elena Ferrari, Vijayalakshmi Atluri

November 1997 **Proceedings of the second ACM workshop on Role-based access control RBAC '97****Publisher:** ACM PressFull text available:  pdf(1.37 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

#### 7 Process and workflow: Lynx: an open architecture for catalyzing the deployment of interactive digital government workflow-based systems

Iván P. Vélez, Bienvenido Vélez

May 2006 **Proceedings of the 2006 international conference on Digital government research dg.o '06****Publisher:** ACM Press

Full text available:  pdf(1.09 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

We introduce Lynx, a new email extension for workflow systems based on Web Services. Web service based workflows provide support for aggregating web services into new higher-level web services by means of process composition. This approach does not usually support direct interaction with people. On the other hand, traditional collaboration tools like email or instant messaging do not provide the necessary support for structured business processes. Lynx provides a web service through which a work ...

**Keywords:** BPEL, E-mail, XML, digital government, web services, workflow, xforms

## 8 Development of a library for reusable workflow objects



Andreas Hofmann

April 1997 **ACM SIGGROUP Bulletin**, Volume 18 Issue 1**Publisher:** ACM PressFull text available:  pdf(638.07 KB)Additional Information: [full citation](#), [abstract](#), [index terms](#)

In the field of office automation technical machines and methods are used to make the workflows in the office more efficient and simple. One new method sets the focus on the optimization of the whole working process rather than on the optimization of a single function: Business Process Modeling or Workflow Modeling. Such processes, that are influencing the financial result of the whole company can be called "profit critical jobs". To achieve the aim of process optimization some tasks have to be ...

## 9 Heuristics-based scheduling of composite web service workloads



Thomas Phan, Wen-Syan Li

November 2006 **Proceedings of the 1st workshop on Middleware for Service Oriented Computing (MW4SOC 2006) MW4SOC '06****Publisher:** ACM PressFull text available:  pdf(114.39 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Web services can be aggregated to create composite workflows that provide streamlined functionality for human users or other systems. Although industry standards and recent research have sought to define best practices and to improve end-to-end workflow composition, one area that has not fully been explored is the scheduling of a workflow's web service requests to actual service provisioning in a multi-tiered, multi-organisation environment. This issue is relevant to modern business scenarios wh ...

**Keywords:** QoS, heuristics, scheduling, web services, workflows

## 10 The Service Ecosystem: Dynamic Self-Aggregation of Pervasive Communication Services



Raffaele Quitadamo, Franco Zambonelli, Giacomo Cabri

May 2007 **Proceedings of the 1st International Workshop on Software Engineering for Pervasive Computing Applications, Systems, and Environments SEPCASE '07****Publisher:** IEEE Computer SocietyFull text available:  pdf(527.70 KB)Additional Information: [full citation](#), [abstract](#)

The continuous growth in ubiquitous computing and network connectivity in our everyday environments calls for a deep rethinking of traditional communication service architectures. In pervasive scenarios, manually configuring communication service/protocols is becoming mostly unthinkable, due to the high heterogeneity of devices and services, and to the decentralized and embedded nature of the involved entities. The next step is towards the "componentization" of communication services, i.e. servi ...

## 11 Developing and integrating enterprise components and services: Enterprise



application integration and complex adaptive systems

Jeff Sutherland, Willem-Jan van den Heuvel

October 2002 **Communications of the ACM**, Volume 45 Issue 10**Publisher:** ACM PressFull text available: pdf(127.83 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)  
 html(47.72 KB)

Could system integration and cooperation be improved with agentified enterprise components?

12 Telework under the co-ordination of a distributed workflow management system

Wilhelm Dangelmaier, Stephan Kress, Rüdiger Wenski

November 1997 **Proceedings of the international ACM SIGGROUP conference on Supporting group work: the integration challenge GROUP '97****Publisher:** ACM PressFull text available: pdf(1.47 MB) Additional Information: [full citation](#), [references](#), [index terms](#)**Keywords:** co-ordinator, intranet, telework, workflow management13 Declarative workflows that support easy modification and dynamic browsing

Richard Hull, Francois Lirbat, Eric Siman, Jianwen Su, Guozhu Dong, Bharat Kumar, Gang Zhou

March 1999 **ACM SIGSOFT Software Engineering Notes , Proceedings of the international joint conference on Work activities coordination and collaboration WACC '99**, Volume 24 Issue 2**Publisher:** ACM PressFull text available: pdf(1.56 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A new programming paradigm named "Vortex" is introduced for specifying a wide range of decision-making activities including, in particular, workflows. In Vortex workflows are specified declaratively. A particular emphasis is on "object-focused" workflows, i.e., workflows focused on how individual input objects should be processed within an organization. Such workflows arise commonly in practice, including insurance claims processing, and many electronic commerce applications, and in the area of ...

**Keywords:** browsing, choice-based execution, decision-making, declarative semantics, workflow management14 Query Optimization: How foreign function integration conquers heterogeneous query processing

Klaudia Hergula, Theo Härder

October 2001 **Proceedings of the tenth international conference on Information and knowledge management CIKM '01****Publisher:** ACM PressFull text available: pdf(1.48 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

With the emergence of application systems which encapsulate databases and related application components, pure data integration using, for example, a federated database system is not possible anymore. Instead, access via predefined functions is the only way to get data from an application system. As a result, retrieval of such heterogeneous and encapsulated data sources needs the combination of generic query as well as predefined function access. In this paper, we present a middleware approach s ...

**Keywords:** cost model, federated database system, function integration, heterogeneous query processing, workflow management system, wrapper



# 15 POESIA: An ontological workflow approach for composing Web services in agriculture

Renato Fileto, Ling Liu, Calton Pu, Eduardo Delgado Assad, Claudia Bauzer Medeiros  
November 2003 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 12 Issue 4

**Publisher:** Springer-Verlag New York, Inc.

Full text available:  [pdf\(726.49 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)


This paper describes the POESIA approach to systematic composition of Web services. This pragmatic approach is strongly centered in the use of domain-specific multidimensional ontologies. Inspired by applications needs and founded on ontologies, workflows, and activity models, POESIA provides well-defined operations (aggregation, specialization, and instantiation) to support the composition of Web services. POESIA complements current proposals for Web services definition and composition by provi ...

**Keywords:** Composition of Web services, Data integration, Ontologies, Semantic Web, Semantics of data and processes

# 16 Simulation modeling within workflow technology


 John A. Miller, Amit P. Sheth, Krysztof Kochut, Xuzhong Wang, Arun Murugan  
December 1995 **Proceedings of the 27th conference on Winter simulation WSC '95**

**Publisher:** ACM Press, IEEE Computer Society

Full text available:  [pdf\(881.58 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents an approach for integrating simulation modeling and analysis capabilities within the workflow management system (WFMS) being developed in the Large Scale Distributed Information Systems (LSDIS) Lab at the University of Georgia. Simulation modeling can be used for studying the efficiency of workflow designs as well as studying the general performance and reliability of WFMSs. We also discuss the importance of using sophisticated monitoring and animation capabilities, and the u ...

# 17 Web and e-business: Composing aggregate web services in BPEL

 Oneyka Ezenwoye, S. Masoud Sadjadi  
March 2006 **Proceedings of the 44th annual Southeast regional conference ACM-SE 44**

**Publisher:** ACM Press

Full text available:  [pdf\(219.62 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Web services are increasingly being used to expose applications over the Internet. These Web services are being integrated within and across enterprises to create higher function services. BPEL is a workflow language that facilitates this integration. Although both academia and industry acknowledge the need for workflow languages, there are few technical papers focused on BPEL. In this paper, we provide an overview of BPEL and idscuss its promises, limitations and challenges.

**Keywords:** A2A integration, B2B integration, BPEL, business processes, web services, workflow language

# 18 Workflow applications and models: On the black art of designing computational workflows

 Yolanda Gil, Pedro A. González-Calero, Ewa Deelman  
June 2007 **Proceedings of the 2nd workshop on Workflows in support of large-scale science WORKS '07**

**Publisher:** ACM Press

Full text available:  [pdf\(843.07 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Computational workflows have recently emerged as an effective paradigm to manage

large-scale distributed scientific computations. Workflow systems can automate many execution-level details and provide assistance in composing and validating workflows. However, there is still a significant effort involved in creating these workflows since they often represent collaborative and exploratory science experiments. Therefore, current practice is effective in producing results but not cost-effective f ...

**Keywords:** computational workflows, scientific workflows, software design, workflow design, workflow systems

## 19 Web technologies: Modeling web service composition and execution via a requirements-driven approach



N. C. Narendra, Bart Orriens

March 2007 **Proceedings of the 2007 ACM symposium on Applied computing SAC '07**

**Publisher:** ACM Press

Full text available: pdf(318.87 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The increasing popularity of Web services for application integration has strengthened the need for automated Web service composition and joint execution. A lot of attention has been paid recently towards techniques for creating a composite Web service from individual Web services based on user requirements, and driven by a variety of criteria. However, the major lacuna so far in Web service composition is the lack of a holistic requirements-driven approach for modeling the Web service execut ...

**Keywords:** requirements, web services

## 20 Efficient algorithms for Web services selection with end-to-end QoS constraints



Tao Yu, Yue Zhang, Kwei-Jay Lin

May 2007 **ACM Transactions on the Web (TWEB)**, Volume 1 Issue 1

**Publisher:** ACM Press

Full text available: pdf(832.74 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Service-Oriented Architecture (SOA) provides a flexible framework for service composition. Using standard-based protocols (such as SOAP and WSDL), composite services can be constructed by integrating atomic services developed independently. Algorithms are needed to select service components with various QoS levels according to some application-dependent performance requirements. We design a broker-based architecture to facilitate the selection of QoS-based services. The objective of service s ...

**Keywords:** End-to-end QoS, Web services, service composition, service oriented architecture (SOA), service selection

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### 1 [A transactional workflow based distributed application composition and execution environment](#)



Santosh K. Shrivastava, Stuart M. Wheeler

September 1998 **Proceedings of the 8th ACM SIGOPS European workshop on Support for composing distributed applications EW 8**

Publisher: ACM Press

Full text available: pdf(774.30 KB) Additional Information: [full citation](#), [index terms](#)

### 2 [Discrete control for safe execution of IT automation workflows](#)



Yin Wang, Terence Kelly, Stéphane Lafortune

March 2007 **ACM SIGOPS Operating Systems Review , Proceedings of the 2007 conference on EuroSys EuroSys '07**, Volume 41 Issue 3

Publisher: ACM Press

Full text available: pdf(679.00 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

As information technology (IT) administration becomes increasingly complex, workflow technologies are gaining popularity for IT automation. Writing correct workflow programs is notoriously difficult. Although static analysis tools are available, fixing defects remains manual and error-prone. This paper applies discrete control theory to IT automation workflows. Discrete control detects flaws in workflows just as static analysis does, and more importantly it also allows safe execution of flawed ...

**Keywords:** deadlock avoidance, discrete control, workflow

### 3 [Access control model I: A reference monitor for workflow systems with constrained task execution](#)



Jason Crampton

June 2005 **Proceedings of the tenth ACM symposium on Access control models and technologies SACMAT '05**


Publisher: ACM Press

Full text available: pdf(208.71 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


We describe a model, independent of any underlying access control paradigm, for specifying authorization constraints such as separation of duty and cardinality constraints in workflow systems. We present a number of results enabling us to simplify the set of authorization constraints. These results form the theoretical foundation for an algorithm that can be used to determine whether a given constrained workflow can be satisfied: that is, does there exist an assignment of authorized users to work ...

**Keywords:** authorization constraint, entailment constraint, reference monitor, workflow system

#### 4 Executable workflows: a paradigm for collaborative design on the Internet


 Hemang Lavana, Amit Khetawat, Franc Brglez, Krzysztof Kozminski  
June 1997 **Proceedings of the 34th annual conference on Design automation DAC '97**

**Publisher:** ACM Press

Full text available:  pdf(358.82 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces a directed hypergraph model that supports (1) workflow composition and reconfiguration while accessing and executing programs, data, and computing resources across the Internet, (2) synchronous and asynchronous peer-to-peer interaction between members of any team during workflow composition and execution, (3) synchronous and asynchronous peer-to-workflow interaction between any team member and any object in the workflow. Given a library of program and data nodes, editing the workflow ...

#### 5 Runtime systems: GridRod: a dynamic runtime scheduler for grid workflows

 Shahaan Ayyub, David Abramson  
June 2007 **Proceedings of the 21st annual international conference on Supercomputing ICS '07**

**Publisher:** ACM Press

Full text available:  pdf(635.81 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Grid Workflows are emerging as practical programming models for solving large e-scientific problems on the Grid. However, it is typically assumed that the workflow components either read or write data to conventional files, which are copied from one execution stage to another, or they are tightly coupled using IPC libraries such as MPI or distributed streaming. More flexible communication can be achieved by overloading conventional READ and WRITE operations with advanced IO mechanisms such as ...

**Keywords:** communication specification, models of computation, runtime scheduling, spatial and temporal concurrency

#### 6 Scheduling: Data driven workflow planning in cluster management systems

 Srinath Shankar, David J. DeWitt  
June 2007 **Proceedings of the 16th international symposium on High performance distributed computing HPDC '07**

**Publisher:** ACM Press


Full text available:  pdf(332.82 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Traditional scientific computing has been associated with harnessing computation cycles within and across clusters of machines. In recent years, scientific applications have become increasingly data-intensive. This is especially true in the fields of astronomy and high energy physics. Furthermore, the lowered cost of disks and commodity machines has led to a dramatic increase in the amount of free disk space spread across machines in a cluster. This space is not being exploited by traditional ...

**Keywords:** cluster management, condor, data management, planning, scheduling, scientific computing, workflow management

#### 7 Workflow applications and models: On the black art of designing computational workflows

 Yolanda Gil, Pedro A. González-Calero, Ewa Deelman  
June 2007 **Proceedings of the 2nd workshop on Workflows in support of large-scale science WORKS '07**

**Publisher:** ACM PressFull text available:  pdf(843.07 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Computational workflows have recently emerged as an effective paradigm to manage large-scale distributed scientific computations. Workflow systems can automate many execution-level details and provide assistance in composing and validating workflows. However, there is still a significant effort involved in creating these workflows since they often represent collaborative and exploratory science experiments. Therefore, current practice is effective in producing results but not cost-effective f ...

**Keywords:** computational workflows, scientific workflows, software design, workflow design, workflow systems

## 8 Adaptation and integration: Workflow adaptation as an autonomic computing problem



Kevin Lee, Rizos Sakellariou, Norman W. Paton, Alvaro A. A. Fernandes

June 2007 **Proceedings of the 2nd workshop on Workflows in support of large-scale science WORKS '07****Publisher:** ACM PressFull text available:  pdf(266.14 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The performance of long running scientific workflows stands to benefit from adapting to changes in their environment. Autonomic Computing provides methodologies for managing run-time adaptations in managed systems. In this paper, we apply the monitoring, analysis, planning and execution (MAPE) model from autonomic computing to support the runtime modification of workflows with the aim of improving their performance. We systematically identify run-time adaptations and indicate how such behavior ...

**Keywords:** adaptation, autonomic computing, scheduling, workflows

## 9 Adaptive selection of necessary and sufficient checkpoints for dynamic verification of temporal constraints in grid workflow systems



Jinjun Chen, Yun Yang

June 2007 **ACM Transactions on Autonomous and Adaptive Systems (TAAS)**, Volume 2 Issue 2**Publisher:** ACM PressFull text available:  pdf(696.19 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


In grid workflow systems, a checkpoint selection strategy is responsible for selecting checkpoints for conducting temporal verification at the runtime execution stage. Existing representative checkpoint selection strategies often select some unnecessary checkpoints and omit some necessary ones because they cannot adapt to the dynamics and uncertainty of runtime activity completion duration. In this article, based on the dynamics and uncertainty of runtime activity completion duration, we deve ...

**Keywords:** Grid workflows, adaptive checkpoint selection, temporal constraints, temporal verification

## 10 Workflow enactment with continuation and future objects



Dragos A. Manolescu

November 2002 **ACM SIGPLAN Notices , Proceedings of the 17th ACM SIGPLAN conference on Object-oriented programming, systems, languages, and applications OOPSLA '02**, Volume 37 Issue 11**Publisher:** ACM PressFull text available:  pdf(322.59 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

An increasing number of software developers are turning to workflow to separate the logic and the control aspects in their applications, thus making them more amenable to

change. However, in spite of recent efforts to standardize and provide reusable workflow components, many developers build their own. This is a challenging endeavor and involves solving problems which seem incompatible with the object paradigm and current object-oriented programming languages. In the context of an object-orient ...

**Keywords:** continuations, future objects, micro-workflow, trampolined style, workflow

# 11 Research sessions: potpourri: Workflow management with service quality guarantees



Michael Gillmann, Gerhard Weikum, Wolfgang Wonner

June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on Management of data SIGMOD '02**

**Publisher:** ACM Press

Full text available: pdf(1.29 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

Workflow management systems (WFMS) that are geared for the orchestration of business processes across multiple organizations are complex distributed systems: they consist of multiple workflow engines, application servers, and communication middleware servers such as ORBs, where each of these server types can be replicated on multiple computers for scalability and availability. Finding an appropriate system configuration with guaranteed application-specific quality of service in terms of throughpu ...

# 12 An agent-based approach for supporting cross-enterprise workflows

Liangzhao Zeng, Anne Ngu, Boualem Benatallah, Milton O'Dell

January 2001 **Proceedings of the 12th Australasian database conference ADC '01**

**Publisher:** IEEE Computer Society

Full text available: pdf(774.93 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)



[Publisher Site](#)

In order to support global competitiveness and rapid market responsiveness, virtual enterprises need to efficiently integrate different organization's workflows to provide customized services. Currently, most of the integrations are case-based which have high setup cost and involve time consuming low level programming. Cross-enterprise workflow that is able to streamline and coordinate business processes across organizations in dynamic Web environment provides a low cost and flexible solution. W ...

# 13 Specification and implementation of exceptions in workflow management systems



Fabio Casati, Stefano Ceri, Stefano Paraboschi, Guiseppe Pozzi

September 1999 **ACM Transactions on Database Systems (TODS)**, Volume 24 Issue 3

**Publisher:** ACM Press

Full text available: pdf(250.40 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

Although workflow management systems are most applicable when an organization follows standard business processes and routines, any of these processes faces the need for handling exceptions, i.e., asynchronous and anomalous situations that fall outside the normal control flow. In this paper we concentrate upon anomalous situations that, although unusual, are part of the semantics of workflow applications, and should be specified and monitored coherently; in most real-life applica ...

**Keywords:** active rules, asynchronous events, exceptions, workflow management systems


# 14 Workflow, transactions and datalog



Anthony J. Bonner

May 1999 **Proceedings of the eighteenth ACM SIGMOD-SIGACT-SIGART symposium on Principles of database systems PODS '99**

**Publisher:** ACM Press

Full text available:  pdf(1.83 MB)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

## 15 [The specification and enforcement of authorization constraints in workflow management systems](#)



Elisa Bertino, Elena Ferrari, Vijay Atluri

February 1999 **ACM Transactions on Information and System Security (TISSEC)**, Volume 2 Issue 1

Publisher: ACM Press

Full text available:  pdf(374.02 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

In recent years, workflow management systems (WFMSs) have gained popularity in both research and commercial sectors. WFMSs are used to coordinate and streamline business processes. Very large WFMSs are often used in organizations with users in the range of several thousands and process instances in the range of tens and thousands. To simplify the complexity of security administration, it is common practice in many businesses to allocate a role for each activity in the process and then assign ...

**Keywords:** access control, authorization constraints, role and user planning


## 16 [A comprehensive approach to flexibility in workflow management systems](#)



Petra Heint, Stefan Horn, Stefan Jablonski, Jens Neeb, Katrin Stein, Michael Teschke

March 1999 **ACM SIGSOFT Software Engineering Notes , Proceedings of the international joint conference on Work activities coordination and collaboration WACC '99**, Volume 24 Issue 2

Publisher: ACM Press

Full text available:  pdf(1.23 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Flexibility has recently grown to be one of the major research topics in the area of workflow management. In this paper we focus on flexibility of workflow management applications, in contrast to flexibility of the implementation of workflow management systems. In a case study we show the necessity of flexibility in workflow management applications. This flexibility can roughly be classified into flexibility, which is provided by the workflow type, and flexibility, which goes beyond the scope of ...

**Keywords:** flexibility, workflow management system


## 17 [Declarative workflows that support easy modification and dynamic browsing](#)



Richard Hull, Francois Llibat, Eric Siman, Jianwen Su, Guozhu Dong, Bharat Kumar, Gang Zhou

March 1999 **ACM SIGSOFT Software Engineering Notes , Proceedings of the international joint conference on Work activities coordination and collaboration WACC '99**, Volume 24 Issue 2

Publisher: ACM Press

Full text available:  pdf(1.56 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A new programming paradigm named "Vortex" is introduced for specifying a wide range of decision-making activities including, in particular, workflows. In Vortex workflows are specified declaratively. A particular emphasis is on "object-focused" workflows, i.e., workflows focused on how individual input objects should be processed within an organization. Such workflows arise commonly in practice, including insurance claims processing, and many electronic commerce applications, and in the area of ...

**Keywords:** browsing, choice-based execution, decision-making, declarative semantics, workflow management

18 Logic based modeling and analysis of workflows

Hasan Davulcu, Michael Kifer, C. R. Ramakrishnan, I. V. Ramakrishnan

May 1998 **Proceedings of the seventeenth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems PODS '98**

Publisher: ACM Press

Full text available: pdf(1.23 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)19 Internet-based workflows: a paradigm for dynamically reconfigurable desktop environments

Hemang Lavana, Amit Khetawat, Franc Brglez

November 1997 **Proceedings of the international ACM SIGGROUP conference on Supporting group work: the integration challenge GROUP '97**

Publisher: ACM Press

Full text available: pdf(1.47 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**Keywords:** Internet, Petri net, collaborative, desktop, reconfigurable, recordable, workflows20 A flexible model supporting the specification and enforcement of role-based authorization in workflow management systems

Elisa Bertino, Elena Ferrari, Vijayalakshmi Atluri

November 1997 **Proceedings of the second ACM workshop on Role-based access control RBAC '97**

Publisher: ACM Press

Full text available: pdf(1.37 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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### 1 [Merging application-centric and data-centric approaches to support transaction-oriented multi-system workflows](#)


 Y. Breitbart, A. Deacon, H.-J. Schek, A. Sheth, G. Weikum  
 September 1993 **ACM SIGMOD Record**, Volume 22 Issue 3

Publisher: ACM Press

Full text available: pdf(683.44 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Workflow management is primarily concerned with dependencies between the tasks of a workflow, to ensure correct control flow and data flow. Transaction management, on the other hand, is concerned with preserving data dependencies by preventing execution of conflicting operations from multiple, concurrently executing tasks or transactions. In this paper we argue that many applications will be served better if the properties of transaction and workflow models are supported by an integrated ar ...

### 2 [Research sessions: potpourri: Workflow management with service quality guarantees](#)



Michael Gillmann, Gerhard Weikum, Wolfgang Wonner

 June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on Management of data SIGMOD '02**

Publisher: ACM Press

Full text available: pdf(1.29 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Workflow management systems (WFMS) that are geared for the orchestration of business processes across multiple organizations are complex distributed systems: they consist of multiple workflow engines, application servers, and communication middleware servers such as ORBs, where each of these server types can be replicated on multiple computers for scalability and availability. Finding an appropriate system configuration with guaranteed application-specific quality of service in terms of throughpu ...

### 3 [The matrix and beyond: expanding proactive resources for customers](#)



Mo Nishiyama, Leslie J. McNeil, Holly E. Wyatt

 November 2006 **Proceedings of the 34th annual ACM SIGUCCS conference on User services SIGUCCS '06**

Publisher: ACM Press

Full text available: pdf(152.76 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

At Oregon Health & Science University (OHSU), essential duties of the Information Technology Group (ITG) include providing support for a diverse customer base. Faculty, staff, students, volunteers, visiting scholars, interns, vendors, and community healthcare partners all rely on ITG's Customer Relations Management Division (CRMD) for resolving their computing and account access issues. In a dynamic support environment where many of the customer roles falls outside the one-size-fits-all support ...

**Keywords:** communication, customer service, electronic documentation, knowledge management, portals, role-based matrix, workflow improvement

4 A semi-automatic system with an iterative learning method for discovering the leading indicators in business processes



Wei Peng, Tong Sun, Philip Rose, Tao Li

August 2007 **Proceedings of the 2007 international workshop on Domain driven data mining DDDM '07**

**Publisher:** ACM Press

Full text available: pdf(539.96 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Within Business Intelligence (BI) systems, a Key Performance Indicator (**KPI**) is a measurement of how well the organization, or a specific individual or process within that organization, performs an operational, tactical, or strategic activity that is critical for the current and future success of that organization [1]. The **leading indicators** are one type of KPIs that present key drivers of business value, are predictors of future outcomes, and offer the organization the unique o ...

5 An approach to workflow modeling and analysis



Hemant Kr. Meena, Indradeep Saha, Koushik Kr. Mondal, T. V. Prabhakar

October 2005 **Proceedings of the 2005 OOPSLA workshop on Eclipse technology eXchange eclipse '05**

**Publisher:** ACM Press

Full text available: pdf(441.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper we present a new approach to workflow analysis. We model the workflow using Activity diagrams, convert the Activity diagrams to Petri nets and use the theoretical results in the Petri nets domain to analyze the equivalent Petri nets and infer properties of the original workflow. We have demonstrated the possibility by developing an Eclipse plug-in, which can be used to model workflows using Activity Diagrams and then analyze these workflow models using Petri nets.

**Keywords:** Eclipse, Petri nets, activity diagrams, workflow, workflow analysis

6 Report from the NSF workshop on workflow and process automation in information systems



Amit Sheth, Dimitrios Georgakopoulos, Stef M. M. Joosten, Marek Rusinkiewicz, Walt Scacchi, Jack Wileden, Alexander L. Wolf

January 1997 **ACM SIGSOFT Software Engineering Notes**, Volume 22 Issue 1

**Publisher:** ACM Press

Full text available: pdf(1.24 MB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

An interdisciplinary research community needs to address challenging issues raised by applying workflow management technology in information systems. This conclusion results from the NSF workshop on Workflow and Process Automation in Information Systems which was held at the State Botanical Garden of Georgia during May 8-10, 1996. The workshop brought together active researchers and practitioners from several communities, with significant representation from database and distributed systems, sof ...

7 Report from the NSF workshop on workflow and process automation in information systems




Amit Sheth, Dimitrios Georgakopoulos, Stef M. M. Joosten, Marek Rusinkiewicz, Walt Scacchi, Jack Wileden, Alexander L. Wolf

December 1996 **ACM SIGMOD Record**, Volume 25 Issue 4

**Publisher:** ACM Press

Full text available: Additional Information:

 pdf(1.31 MB)[full citation](#), [abstract](#), [citations](#), [index terms](#)

An interdisciplinary research community needs to address challenging issues raised by applying workflow management technology in information systems. This conclusion results from the NSF workshop on Workflow and Process Automation in Information Systems which was held at the State Botanical Garden of Georgia during May 8-10, 1996. The workshop brought together active researchers and practitioners from several communities, with significant representation from database and distributed systems ...


## 8 Dynamic change within workflow systems



Clarence Ellis, Karim Keddara, Grzegorz Rozenberg

August 1995 **Proceedings of conference on Organizational computing systems COCS '95**

Publisher: ACM Press

Full text available:  pdf(1.01 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Dynamic change is a large and pervasive unsolved problem which surfaces within office systems as well as within software engineering, manufacturing, and numerous other domains. Procedural changes, performed in an ad hoc manner, can cause inefficiencies, inconsistencies, and catastrophic breakdowns within offices. This paper is concerned with dynamic change to procedures in the context of workflow systems. How can we make workflow systems more flexible and open? We believe that part of the a ...


## 9 WIDE workflow development methodology



L. Baresi, F. Casati, S. Castano, M. G. Fugini, I. Mirbel, B. Pernici

March 1999 **ACM SIGSOFT Software Engineering Notes , Proceedings of the international joint conference on Work activities coordination and collaboration WACC '99**, Volume 24 Issue 2

Publisher: ACM Press

Full text available:  pdf(1.34 MB)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The development of workflows (WFs) for complex organizations to be interfaced with existing information systems requires a specific methodological approach to guarantee benefits and effectiveness of the final results. In fact, the WF should be well integrated in the organization both from the technical and the organizational point of view. While the characteristics of the Workflow Management System (WFMS) platform adopted in the implementation are relevant to establish the boundary between the w ...

**Keywords:** exceptions, patterns, triggers, workflow design



## 10 Technical papers: Evaluation of a workflow scheduler using integrated performance modelling and batch queue wait time prediction



Daniel Nurmi, Anirban Mandal, John Brevik, Chuck Koelbel, Rich Wolski, Ken Kennedy

November 2006 **Proceedings of the 2006 ACM/IEEE conference on Supercomputing SC '06**

Publisher: ACM Press

Full text available:  pdf(313.07 KB) html(2.21 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Large-scale distributed systems offer computational power at unprecedented levels. In the past, HPC users typically had access to relatively few individual supercomputers and, in general, would assign a one-to-one mapping of applications to machines. Modern HPC users have simultaneous access to a large number of individual machines and are beginning to make use of all of them for single-application execution cycles. One method that application developers have devised in order to take advantage o ...

## 11 Heuristics-based scheduling of composite web service workloads

Thomas Phan, Wen-Syan Li



November 2006 **Proceedings of the 1st workshop on Middleware for Service Oriented Computing (MW4SOC 2006) MW4SOC '06**

**Publisher:** ACM Press

Full text available: pdf(114.39 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Web services can be aggregated to create composite workflows that provide streamlined functionality for human users or other systems. Although industry standards and recent research have sought to define best practices and to improve end-to-end workflow composition, one area that has not fully been explored is the scheduling of a workflow's web service requests to actual service provisioning in a multi-tiered, multi-organisation environment. This issue is relevant to modern business scenarios wh ...

**Keywords:** QoS, heuristics, scheduling, web services, workflows

12 4<sup>th</sup> international workshop on middleware for grid computing (MGC'06): A novel



approach to allocating QoS-constrained workflow-based jobs in a multi-cluster grid

Yash Patel, John Darlington

November 2006 **Proceedings of the 4th international workshop on Middleware for grid computing MCG '06**

**Publisher:** ACM Press

Full text available: pdf(164.01 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Clusters are increasingly interconnected to form multi-cluster systems, which are becoming popular for scientific computation. Grid users often submit their applications in the form of workflows with certain Quality of Service (QoS) requirements imposed on the workflows. These workflows detail the composition of Grid services and the level of service required from the Grid. This paper addresses workload allocation techniques for Grid workflows. We model a resource within a cluster as a G/G/

13 Rule-based workflow management for bioinformatics



S. Conery, M. Catchen, Michael Lynch

September 2005 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 14 Issue 3

**Publisher:** Springer-Verlag New York, Inc.

Full text available: pdf(428.34 KB) Additional Information: [full citation](#), [abstract](#)

We describe a data-centric software architecture for bioinformatics workflows and a rule-based workflow enactment system that uses declarative specifications of data dependencies between steps to automatically order the execution of those steps. A data-centric view allows researchers to develop abstract descriptions of workflow products and provides mechanisms for describing workflow steps as objects. The rule-based approach supports an iterative design methodology for creating new workflows, whe ...

**Keywords:** Bioinformatics, Rule-based system, Workflow

14 Document recognition and classification: Meta-algorithmic systems for document classification



Steven J. Simske, David W. Wright, Margaret Sturgill

October 2006 **Proceedings of the 2006 ACM symposium on Document engineering DocEng '06**

**Publisher:** ACM Press

Full text available: pdf(289.80 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

To address cost and regulatory concerns, many businesses are converting paper-based elements of their workflows into fully electronic flows that use the content of the documents. Scanning the document contents into workflows, however, is a manual, error-prone, and costly process especially when the data extraction process requires high accuracy. These manual costs are a primary barrier to widespread adoption of distributed capture solutions for business critical workflows such as insurance claim ...

**Keywords:** confusion matrix, document classification, document indexing, engine combination, meta-algorithmics

# 15 Process and workflow: Argos: dynamic composition of web services for goods movement analysis and planning

José Luis Ambite, Genevieve Giuliano, Peter Gordon, Mountu Jinwala, Dipsy Kapoor, LanLan Wang, Qisheng Pan

May 2006 **Proceedings of the 2006 international conference on Digital government research dg.o '06**

**Publisher:** ACM Press

Full text available:  pdf(227.96 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


This Project Highlight describes Year 3 activities of our Argos research. The purpose of the research is to develop a flexible data query and analysis system based on the web services paradigm. Our application domain is metropolitan goods movement. The project began in August 2003. We seek to blend computer science and social science approaches by developing new data integration tools and applying them to social science research problems. The research has three objectives: 1) to advance computer ...

# 16 Atomicity and isolation for transactional processes

Heiko Schuldt, Gustavo Alonso, Catriel Beeri, Hans-Jörg Schek

March 2002 **ACM Transactions on Database Systems (TODS)**, Volume 27 Issue 1

**Publisher:** ACM Press

Full text available:  pdf(1.22 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Processes are increasingly being used to make complex application logic explicit. Programming using processes has significant advantages but it poses a difficult problem from the system point of view in that the interactions between processes cannot be controlled using conventional techniques. In terms of recovery, the steps of a process are different from operations within a transaction. Each one has its own termination semantics and there are dependencies among the different steps. Regarding c ...


**Keywords:** Advanced transaction models, business process management, electronic commerce, execution guarantees, locking, processes, semantically rich transactions, transactional workflows, unified theory of concurrency control and recovery

# 17 Gridflow Description, Query, and Execution at SCEC using the SDSC Matrix

Jonathan Weinberg, Arun Jagatheesan, Allen Ding, Marcio Faerman, Yuanfang Hu

June 2004 **Proceedings of the 13th IEEE International Symposium on High Performance Distributed Computing HPDC '04**

**Publisher:** IEEE Computer Society

Full text available:  [Publisher Site](#) Additional Information: [full citation](#), [abstract](#)

While conventional workflow systems have been around for many years, the deployment of analogous systems onto a grid infrastructure introduces a number of unique questions and challenges. Innovative approaches to grid workflow (gridflow) are needed to leverage the heterogeneity, autonomy, dynamic behavior, and wide-area distribution that characterize grid resources. The Matrix Project carries out research and development to deliver the language descriptions and protocols necessary to build colla ...

# 18 Information technology and physical space

Henry C. Lucas

November 2001 **Communications of the ACM**, Volume 44 Issue 11

**Publisher:** ACM Press

Full text available:  pdf(122.14 KB)  html(42.79 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

19 On theories, methods and techniques: Designing complex socio-technical systems: a heuristic schema based on cultural-historical psychology

Antonio Rizzo, Simone Pozzi, Luca Save, Mark Sujan

September 2005 **Proceedings of the 2005 annual conference on European association of cognitive ergonomics EACE '05**

**Publisher:** University of Athens

Full text available:  pdf(429.54 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper presents a practical description of an analysis and design methodology for complex socio-technical systems. The basis of the approach is a re-elaboration of the unit of analysis originally proposed by Vygotsky. The method focuses on man-artefact interactions in order to inform the design of new artefacts and patterns of interactions. Depending on the required level of design intervention and on the level of structure of the domain the focus is directed either towards the analysis and ...


**Keywords:** Unit of analysis, activity theory, cultural-historical psychology, interaction design, socio-technical systems

20 A simulation-based production testbed

 Albert Jones, Michael Iuliano

December 1997 **Proceedings of the 29th conference on Winter simulation WSC '97**

**Publisher:** ACM Press, IEEE Computer Society

Full text available:  pdf(1.09 MB) Additional Information: [full citation](#), [references](#), [index terms](#)

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IET JNL	IET Journal or Magazine
IEEE CNF	IEEE Conference Proceeding
IET CNF	IET Conference Proceeding
IEEE STD	IEEE Standard

## 1. Decentralized Workflow Execution for Virtual Enterprises in Grid Environment

Wei Tan; Yushun Fan;

[Grid and Cooperative Computing Workshops, 2006. GCCW '06. Fifth International Conference on Oct. 2006](#) Page(s):308 - 314

Digital Object Identifier 10.1109/GCCW.2006.34

[Abstract](#) | Full Text: [PDF](#)(305 KB) IEEE CNF[Rights and Permissions](#)

## 2. Communication partner identification in distributed job workflow execution over the grid

Feng, Y.; Cai, W.; Jiannong Cao;

[Distributed Computing Systems Workshops, 2005. 25th IEEE International Conference on 6-10 June 2005](#) Page(s):587 - 593

Digital Object Identifier 10.1109/ICDCSW.2005.50

[Abstract](#) | Full Text: [PDF](#)(216 KB) IEEE CNF[Rights and Permissions](#)

## 3. Assigning Local Fixed-time Constraints in Grid Workflow Systems

Jinjun Chen; Yun Yang;

[Grid and Cooperative Computing Workshops, 2006. GCCW '06. Fifth International Conference on Oct. 2006](#) Page(s):227 - 234

Digital Object Identifier 10.1109/GCCW.2006.24

[Abstract](#) | Full Text: [PDF](#)(701 KB) IEEE CNF[Rights and Permissions](#)

## 4. Task scheduling based on probabilistic constraint propagation for distributed workflow enactment

Kanzow, S.; Amirat, Y.;

[Cybernetics and Intelligent Systems, 2004 IEEE Conference on Volume 2, 2004](#) Page(s):838 - 843

Digital Object Identifier 10.1109/ICCIS.2004.1460697

[Abstract](#) | Full Text: [PDF](#)(1110 KB) IEEE CNF[Rights and Permissions](#)

## 5. Autonomic workflow execution in the grid

Nichols, J.; Demirkan, H.; Goul, M.;

[Systems, Man and Cybernetics, Part C, IEEE Transactions on Volume 36, Issue 3, May 2006](#) Page(s):353 - 364

Digital Object Identifier 10.1109/TSMCC.2006.871574

[Abstract](#) | Full Text: [PDF](#)(800 KB) IEEE JNL[Rights and Permissions](#)

## 6. Analyzing Inaccurate Artifact Usages in a Workflow Schema

Feng-Jian Wang; Chia-Lin Hsu; Huin-Jen Hsu;

[Computer Software and Applications Conference, 2006. COMPSAC '06. 30th Annual International Volume 2, Sept. 2006](#) Page(s):109 - 114

Digital Object Identifier 10.1109/COMPSAC.2006.113

[Abstract](#) | Full Text: [PDF](#)(140 KB) IEEE CNF[Rights and Permissions](#)

- 7. Enabling pervasive execution of workflows**  
Montagut, F.; Molva, R.;  
Collaborative Computing, Networking, Applications and Worksharing, 2005 International Conference on  
19-21 Dec. 2005 Page(s):10 pp.  
Digital Object Identifier 10.1109/COLCOM.2005.1651227  
  
[Abstract](#) | [Full Text: PDF\(184 KB\)](#) IEEE CNF  
[Rights and Permissions](#)
- 8. An ontology-driven architecture for flexible workflow execution**  
Vieira, T.A.S.C.; Casanova, M.A.; Ferrao, L.G.;  
WebMedia and LA-Web, 2004. Proceedings  
2004 Page(s):70 - 77  
Digital Object Identifier 10.1109/WEBMED.2004.1348150  
  
[Abstract](#) | [Full Text: PDF\(265 KB\)](#) IEEE CNF  
[Rights and Permissions](#)
- 9. Workflow history management in virtual enterprises using a light-weight workflow management system**  
Muth, P.; Weissenfels, J.; Gillmann, M.; Weikum, G.;  
Research Issues on Data Engineering: Information Technology for Virtual Enterprises, 1999. RIDE-VE '99. Proceedings., Ninth International Workshop on  
23-24 March 1999 Page(s):148 - 155  
Digital Object Identifier 10.1109/RIDE.1999.758652  
  
[Abstract](#) | [Full Text: PDF\(1756 KB\)](#) IEEE CNF  
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- 10. Towards Transactional PervasiveWorkflows**  
Montagut, F.; Molva, R.;  
Enterprise Distributed Object Computing Conference, 2006. EDOC '06. 10th IEEE International  
Oct. 2006 Page(s):141 - 152  
Digital Object Identifier 10.1109/EDOC.2006.63  
  
[Abstract](#) | [Full Text: PDF\(319 KB\)](#) IEEE CNF  
[Rights and Permissions](#)
- 11. Design and Evaluation of an Autonomic Workflow Engine**  
Heinis, T.; Pautasso, C.; Alonso, G.;  
Autonomic Computing, 2005. ICAC 2005. Proceedings. Second International Conference on  
13-16 June 2005 Page(s):27 - 38  
Digital Object Identifier 10.1109/ICAC.2005.21  
  
[Abstract](#) | [Full Text: PDF\(208 KB\)](#) IEEE CNF  
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- 12. Failure handling and coordinated execution of concurrent workflows**  
Karnath, M.; Ramamritham, K.;  
Data Engineering, 1998. Proceedings., 14th International Conference on  
23-27 Feb. 1998 Page(s):334 - 341  
Digital Object Identifier 10.1109/ICDE.1998.655796  
  
[Abstract](#) | [Full Text: PDF\(128 KB\)](#) IEEE CNF  
[Rights and Permissions](#)
- 13. Workflows in Computation Grids**  
Kuropka, D.; Vossen, G.; Weske, M.;  
Grid and Cooperative Computing Workshops, 2006. GCCW '06. Fifth International Conference on  
Oct. 2006 Page(s):296 - 301  
Digital Object Identifier 10.1109/GCCW.2006.101  
  
[Abstract](#) | [Full Text: PDF\(125 KB\)](#) IEEE CNF  
[Rights and Permissions](#)
- 14. Design of a Peer-to-Peer Information System Using the GT4 Index Service**



Bharathi, S.; Chervenak, A.;  
[Grid Computing, 7th IEEE/ACM International Conference on](#)  
28-29 Sept. 2006 Page(s):321 - 322  
Digital Object Identifier 10.1109/ICGRID.2006.311039  
[Abstract](#) | [Full Text: PDF\(101 KB\)](#) IEEE CNF  
[Rights and Permissions](#)

**15. Using Workflow for Dynamic Security Context Management in Grid-based Applications**

Demchenko, Y.; Gommans, L.; de Laat, C.; Taal, A.; Wan, A.; Mulmo, O.;  
[Grid Computing, 7th IEEE/ACM International Conference on](#)  
28-29 Sept. 2006 Page(s):72 - 79  
Digital Object Identifier 10.1109/ICGRID.2006.311000  
[Abstract](#) | [Full Text: PDF\(179 KB\)](#) IEEE CNF  
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**16. Overhead Analysis of Grid Workflow Applications**

Nerieri, F.; Prodan, R.; Fahringer, T.; Hong-Linh Truong;  
[Grid Computing, 7th IEEE/ACM International Conference on](#)  
28-29 Sept. 2006 Page(s):17 - 24  
Digital Object Identifier 10.1109/ICGRID.2006.310993  
[Abstract](#) | [Full Text: PDF\(847 KB\)](#) IEEE CNF  
[Rights and Permissions](#)

**17. Probabilistic calculation of execution intervals for workflows**

Eder, J.; Pichler, H.;  
[Temporal Representation and Reasoning, 2005. TIME 2005. 12th International Symposium on](#)  
23-25 June 2005 Page(s):183 - 185  
Digital Object Identifier 10.1109/TIME.2005.29  
[Abstract](#) | [Full Text: PDF\(72 KB\)](#) IEEE CNF  
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**18. Supporting application-tailored grid file system sessions with WSRF-based services**

Ming Zhao; Chadha, V.; Figueiredo, R.J.;  
[High Performance Distributed Computing, 2005. HPDC-14. Proceedings. 14th IEEE International Symposium on](#)  
24-27 July 2005 Page(s):24 - 33  
Digital Object Identifier 10.1109/HPDC.2005.1520930  
[Abstract](#) | [Full Text: PDF\(623 KB\)](#) IEEE CNF  
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**19. QoS-aware replanning of composite Web services**

Canfora, G.; Di Penta, M.; Esposito, R.; Villani, M.L.;  
[Web Services, 2005. ICWS 2005. Proceedings. 2005 IEEE International Conference on](#)  
11-15 July 2005 Page(s):121 - 129 vol.1  
Digital Object Identifier 10.1109/ICWS.2005.96  
[Abstract](#) | [Full Text: PDF\(456 KB\)](#) IEEE CNF  
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**20. Dynamic stochastic models for workflow response optimization**

Sion, R.; Tatemura, J.;  
[Web Services, 2005. ICWS 2005. Proceedings. 2005 IEEE International Conference on](#)  
11-15 July 2005 Page(s):  
Digital Object Identifier 10.1109/ICWS.2005.50  
[Abstract](#) | [Full Text: PDF\(376 KB\)](#) IEEE CNF  
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**21.**

JXPL: an XML-based scripting language for workflow execution in a grid environment  
Hunt, C.S.; Ferner, C.S.; Brown, J.L.;  
[SoutheastCon, 2005. Proceedings. IEEE](#)  
8-10 April 2005 Page(s):345 - 350

Digital Object Identifier 10.1109/SECON.2005.1423270

[Abstract](#) | [Full Text: PDF\(1782 KB\)](#) IEEE CNF

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**22. TERRA-ACQUA, adaptable definition and execution of workflows**

Vargas-Solar, G.; Belhajjame, K.; Contreras, E.E.C.; Marquez, K.J.P.;

[Web Information Systems Engineering, 2003. WISE 2003. Proceedings of the Fourth International Conference on](#)

10-12 Dec. 2003 Page(s):299 - 302

[Abstract](#) | [Full Text: PDF\(245 KB\)](#) IEEE CNF

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**23. Using UML to design distributed collaborative workflows: from UML to XPDL**

Ping Jiang; Mair, Q.; Newman, J.;

[Enabling Technologies: Infrastructure for Collaborative Enterprises, 2003. WET ICE 2003. Proceedings. Twelfth IEEE International Workshops on](#)

9-11 June 2003 Page(s):71 - 76

[Abstract](#) | [Full Text: PDF\(257 KB\)](#) IEEE CNF

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**24. An agent-based approach for supporting cross-enterprise workflows**

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